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<110> Enerbäck, Sven
      Krook, Katarina
      Rondahl, Lena
      Wasserman, Wyeth

<120> PROMOTER SEQUENCES

<130> 13425-042001

<150> SE 0004102-0
<151> 2000-11-09

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<151> 2000-10-10

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<151> 2000-09-26

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ctg gga gtg gtg ccc tac ctg agc gag cag aat tac tac cgg gct gcg     2318
Leu Gly Val Val Pro Tyr Leu Ser Glu Gln Asn Tyr Tyr Arg Ala Ala
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ggc agc tac ggc ggc atg gcc agc ccc atg ggc gtc tat tcc ggc cac     2366
Gly Ser Tyr Gly Gly Met Ala Ser Pro Met Gly Val Tyr Ser Gly His
     30                  35                  40

ccg gag cag tac agc gcg ggg atg ggc cgc tcc tac gcg ccc tac cac     2414
Pro Glu Gln Tyr Ser Ala Gly Met Gly Arg Ser Tyr Ala Pro Tyr His
 45                  50                  55                  60

cac cac cag ccc gcg gcg cct aag gac ctg gtg aag ccg ccc tac agc     2462
His His Gln Pro Ala Ala Pro Lys Asp Leu Val Lys Pro Pro Tyr Ser
                 65                  70                  75

tac atc gcg ctc atc acc atg gcc atc cag aac gcg ccc gag aag aag     2510
Tyr Ile Ala Leu Ile Thr Met Ala Ile Gln Asn Ala Pro Glu Lys Lys
                 80                  85                  90

atc acc ttg aac ggc atc tac cag ttc atc atg gac cgc ttc ccc ttc     2558
Ile Thr Leu Asn Gly Ile Tyr Gln Phe Ile Met Asp Arg Phe Pro Phe
         95                  100                 105

tac cgg gag aac aag cag ggc tgg cag aac agc atc cgc cac aac ctc     2606
Tyr Arg Glu Asn Lys Gln Gly Trp Gln Asn Ser Ile Arg His Asn Leu
     110                 115                 120

tcg ctc aac gag tgc ttc gtc aag gtg ccc cgc gac gac aag aag ccc     2654
Ser Leu Asn Glu Cys Phe Val Lys Val Pro Arg Asp Asp Lys Lys Pro
125                 130                 135                 140

ggc aag ggc agt tac tgg acc ctg gac ccg gac tcc tac aac atg ttc     2702
Gly Lys Gly Ser Tyr Trp Thr Leu Asp Pro Asp Ser Tyr Asn Met Phe
             145                 150                 155

gag aac ggc agc ttc ctg cgg cgc cgg cgg cgc ttc aaa aag aag gac     2750
Glu Asn Gly Ser Phe Leu Arg Arg Arg Arg Arg Phe Lys Lys Lys Asp
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gcg gcg tcc aag ggc gcc ccg gcc acc ccc cac cta gcg gac gcc ccc   2846
Ala Ala Ser Lys Gly Ala Pro Ala Thr Pro His Leu Ala Asp Ala Pro
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aag gag gcc gag aag aag gtg gtg atc aag agc gag gcg gcg tcc ccg   2894
Lys Glu Ala Glu Lys Lys Val Val Ile Lys Ser Glu Ala Ala Ser Pro
205   210   215   220

gcg ctg ccg gtc atc acc aag gtg gag acg ctg agc ccc gag agc gcg   2942
Ala Leu Pro Val Ile Thr Lys Val Glu Thr Leu Ser Pro Glu Ser Ala
                    225   230   235

ctg cag ggc agc ccg cgc agc gcg gcc tcc acg ccc gcc ggc tcc ccc   2990
Leu Gln Gly Ser Pro Arg Ser Ala Ala Ser Thr Pro Ala Gly Ser Pro
                240   245   250

gac ggt tcg ctg ccg gag cac cac gcc gcg gcg ccc aac ggg ctg cct   3038
Asp Gly Ser Leu Pro Glu His His Ala Ala Ala Pro Asn Gly Leu Pro
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ggc ttc agc gtg gag aac atc atg acc ctg cga acg tcg ccg ccg ggc   3086
Gly Phe Ser Val Glu Asn Ile Met Thr Leu Arg Thr Ser Pro Pro Gly
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gga gag ctg agc ccg ggg gcc gga cgc gcg ggc ctg gtg gtg ccg ccg   3134
Gly Glu Leu Ser Pro Gly Ala Gly Arg Ala Gly Leu Val Val Pro Pro
285   290   295   300

ctg gcg ctg cca tac gcc gcc gcg ccg ccc gcc gcc tac ggc cag ccg   3182
Leu Ala Leu Pro Tyr Ala Ala Ala Pro Pro Ala Ala Tyr Gly Gln Pro
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tgc gct cag ggc ctg gag gcc ggg gcc gcc ggg ggc tac cag tgc agc   3230
Cys Ala Gln Gly Leu Glu Ala Gly Ala Ala Gly Gly Tyr Gln Cys Ser
                320   325   330

atg cga gcg atg agc ctg tac acc ggg gcc gag cgg ccg gcg cac atg   3278
Met Arg Ala Met Ser Leu Tyr Thr Gly Ala Glu Arg Pro Ala His Met
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tgc gtc ccg ccc gcc ctg gac gag gcc ctc tcg gac cac ccg agc ggc   3326
Cys Val Pro Pro Ala Leu Asp Glu Ala Leu Ser Asp His Pro Ser Gly
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ccc acg tcg ccc ctg agc gct ctc aac ctc gcc gcc ggc cag gag ggc   3374
Pro Thr Ser Pro Leu Ser Ala Leu Asn Leu Ala Ala Gly Gln Glu Gly
365   370   375   380

gcg ctc gcc gcc acg ggc cac cac cac cag cac cac ggc cac cac cac   3422
Ala Leu Ala Ala Thr Gly His His His Gln His His Gly His His His
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cag ccc ggg gcc gcc gcg gcg cag gcg gcc tcc tgg tat ctc aac cac       3518
Gln Pro Gly Ala Ala Ala Ala Gln Ala Ala Ser Trp Tyr Leu Asn His
            415             420                 425

agc ggg gac ctg aac cac ctc ccc ggc cac acg ttc gcg gcc cag cag       3566
Ser Gly Asp Leu Asn His Leu Pro Gly His Thr Phe Ala Ala Gln Gln
    430                 435             440

caa act ttc ccc aac gtg cgg gag atg ttc aac tcc cac cgg ctg ggg       3614
Gln Thr Phe Pro Asn Val Arg Glu Met Phe Asn Ser His Arg Leu Gly
445                 450                 455                 460

att gag aac tcg acc ctc ggg gag tcc cag gtg agt ggc aat gcc agc       3662
Ile Glu Asn Ser Thr Leu Gly Glu Ser Gln Val Ser Gly Asn Ala Ser
                465             470                 475

tgc cag ctg ccc tac aga tcc acg ccg cct ctc tat cgc cac gca gcc       3710
Cys Gln Leu Pro Tyr Arg Ser Thr Pro Pro Leu Tyr Arg His Ala Ala
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ccc tac tcc tac gac tgc acg aaa tac tgacgtgtcc cgggacctcc            3757
Pro Tyr Ser Tyr Asp Cys Thr Lys Tyr
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        35                  40                  45
Ser Ala Gly Met Gly Arg Ser Tyr Ala Pro Tyr His His His Gln Pro
    50                  55                  60
Ala Ala Pro Lys Asp Leu Val Lys Pro Pro Tyr Ser Tyr Ile Ala Leu
65                  70                  75                  80
Ile Thr Met Ala Ile Gln Asn Ala Pro Glu Lys Lys Ile Thr Leu Asn
                85                  90                  95
Gly Ile Tyr Gln Phe Ile Met Asp Arg Phe Pro Phe Tyr Arg Glu Asn
            100                 105                 110
Lys Gln Gly Trp Gln Asn Ser Ile Arg His Asn Leu Ser Leu Asn Glu
        115                 120                 125
Cys Phe Val Lys Val Pro Arg Asp Asp Lys Lys Pro Gly Lys Gly Ser
    130                 135                 140
Tyr Trp Thr Leu Asp Pro Asp Ser Tyr Asn Met Phe Glu Asn Gly Ser
145                 150                 155                 160
Phe Leu Arg Arg Arg Arg Arg Phe Lys Lys Lys Asp Val Ser Lys Glu
                165                 170                 175
Lys Glu Glu Arg Ala His Leu Lys Glu Pro Pro Pro Ala Ala Ser Lys
            180                 185                 190
Gly Ala Pro Ala Thr Pro His Leu Ala Asp Ala Pro Lys Glu Ala Glu
        195                 200                 205
Lys Lys Val Val Ile Lys Ser Glu Ala Ala Ser Pro Ala Leu Pro Val
    210                 215                 220
Ile Thr Lys Val Glu Thr Leu Ser Pro Glu Ser Ala Leu Gln Gly Ser
225                 230                 235                 240
Pro Arg Ser Ala Ala Ser Thr Pro Ala Gly Ser Pro Asp Gly Ser Leu
            245                 250                 255
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Pro Glu His His Ala Ala Ala Pro Asn Gly Leu Pro Gly Phe Ser Val
        260             265             270
Glu Asn Ile Met Thr Leu Arg Thr Ser Pro Pro Gly Gly Glu Leu Ser
    275             280             285
Pro Gly Ala Gly Arg Ala Gly Leu Val Val Pro Pro Leu Ala Leu Pro
    290             295             300
Tyr Ala Ala Ala Pro Pro Ala Ala Tyr Gly Gln Pro Cys Ala Gln Gly
305             310             315             320
Leu Glu Ala Gly Ala Ala Gly Gly Tyr Gln Cys Ser Met Arg Ala Met
            325             330             335
Ser Leu Tyr Thr Gly Ala Glu Arg Pro Ala His Met Cys Val Pro Pro
        340             345             350
Ala Leu Asp Glu Ala Leu Ser Asp His Pro Ser Gly Pro Thr Ser Pro
    355             360             365
Leu Ser Ala Leu Asn Leu Ala Ala Gly Gln Glu Gly Ala Leu Ala Ala
    370             375             380
Thr Gly His His His Gln His His Gly His His His Pro Gln Ala Pro
385             390             395             400
Pro Pro Pro Pro Ala Pro Gln Pro Gln Pro Thr Pro Gln Pro Gly Ala
            405             410             415
Ala Ala Ala Gln Ala Ala Ser Trp Tyr Leu Asn His Ser Gly Asp Leu
            420             425             430
Asn His Leu Pro Gly His Thr Phe Ala Ala Gln Gln Gln Thr Phe Pro
        435             440             445
Asn Val Arg Glu Met Phe Asn Ser His Arg Leu Gly Ile Glu Asn Ser
    450             455             460
Thr Leu Gly Glu Ser Gln Val Ser Gly Asn Ala Ser Cys Gln Leu Pro
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ggccgaagcg aagaggcctg gtgggttgtc tcaacatcct tttgctgaga atcgaatacg       180
cagccg atg aac agc cag gaa ggg tgc aag gaa acc ttg aac ggc atc         228
        Met Asn Ser Gln Glu Gly Cys Lys Glu Thr Leu Asn Gly Ile
          1               5                   10

tac cag ttc atc atg gac cgc ttc ccc ttc tac cgg gag aac aag cag         276
Tyr Gln Phe Ile Met Asp Arg Phe Pro Phe Tyr Arg Glu Asn Lys Gln
 15              20                  25                  30

ggc tgg cag aac agc atc cgc cac aac ctc tcg ctc aac gag tgc ttc         324
Gly Trp Gln Asn Ser Ile Arg His Asn Leu Ser Leu Asn Glu Cys Phe
            35              40                  45
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gtc aag gtg ccc cgc gac gac aag aag ccc ggc aag ggc agt tac tgg     372
Val Lys Val Pro Arg Asp Asp Lys Lys Pro Gly Lys Gly Ser Tyr Trp
            50                  55                  60

acc ctg gac ccg gac tcc tac aac atg ttc gag aac ggc agc ttc ctg     420
Thr Leu Asp Pro Asp Ser Tyr Asn Met Phe Glu Asn Gly Ser Phe Leu
            65                  70                  75

cgg cgc cgg cgg cgc ttc aaa aag aag gac gtg tcc aag gag aag gag     468
Arg Arg Arg Arg Arg Phe Lys Lys Lys Asp Val Ser Lys Glu Lys Glu
        80                  85                  90

gag cgg gcc cac ctc aag gag ccg ccc ccg gcg gcg tcc aag ggc gcc     516
Glu Arg Ala His Leu Lys Glu Pro Pro Pro Ala Ala Ser Lys Gly Ala
    95                  100                 105                 110

ccg gcc acc ccc cac cta gcg gac gcc ccc aag gag gcc gag aag aag     564
Pro Ala Thr Pro His Leu Ala Asp Ala Pro Lys Glu Ala Glu Lys Lys
                115                 120                 125

gtg gtg atc aag agc gag gcg gcg tcc ccg gcg ctg ccg gtc atc acc     612
Val Val Ile Lys Ser Glu Ala Ala Ser Pro Ala Leu Pro Val Ile Thr
            130                 135                 140

aag gtg gag acg ctg agc ccc gag agc gcg ctg cag ggc agc ccg cgc     660
Lys Val Glu Thr Leu Ser Pro Glu Ser Ala Leu Gln Gly Ser Pro Arg
            145                 150                 155

agc gcg gcc tcc acg ccc gcc ggc tcc ccc gac ggt tcg ctg ccg gag     708
Ser Ala Ala Ser Thr Pro Ala Gly Ser Pro Asp Gly Ser Leu Pro Glu
        160                 165                 170

cac cac gcc gcg gcg ccc aac ggg ctg cct ggc ttc agc gtg gag aac     756
His His Ala Ala Ala Pro Asn Gly Leu Pro Gly Phe Ser Val Glu Asn
175                 180                 185                 190

atc atg acc ctg cga acg tcg ccg ccg ggc gga gag ctg agc ccg ggg     804
Ile Met Thr Leu Arg Thr Ser Pro Pro Gly Gly Glu Leu Ser Pro Gly
                195                 200                 205

gcc gga cgc gcg ggc ctg gtg gtg ccg ccg ctg gcg ctg cca tac gcc     852
Ala Gly Arg Ala Gly Leu Val Val Pro Pro Leu Ala Leu Pro Tyr Ala
            210                 215                 220

gcc gcg ccg ccc gcc gcc tac ggc cag ccg tgc gct cag ggc ctg gag     900
Ala Ala Pro Pro Ala Ala Tyr Gly Gln Pro Cys Ala Gln Gly Leu Glu
            225                 230                 235

gcc ggg gcc gcc ggg ggc tac cag tgc agc atg cga gcg atg agc ctg     948
Ala Gly Ala Ala Gly Gly Tyr Gln Cys Ser Met Arg Ala Met Ser Leu
        240                 245                 250

tac acc ggg gcc gag cgg ccg gcg cac atg tgc gtc ccg ccc gcc ctg     996
Tyr Thr Gly Ala Glu Arg Pro Ala His Met Cys Val Pro Pro Ala Leu
255                 260                 265                 270
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gac gag gcc ctc tcg gac cac ccg agc ggc ccc acg tcg ccc ctg agc      1044
Asp Glu Ala Leu Ser Asp His Pro Ser Gly Pro Thr Ser Pro Leu Ser
                275                 280                 285

gct ctc aac ctc gcc gcc ggc cag gag ggc gcg ctc gcc gcc acg ggc      1092
Ala Leu Asn Leu Ala Ala Gly Gln Glu Gly Ala Leu Ala Ala Thr Gly
                290                 295                 300

cac cac cac cag cac cac ggc cac cac cac ccg cag gcg ccg ccg ccc      1140
His His His Gln His His Gly His His His Pro Gln Ala Pro Pro Pro
                305                 310                 315

ccg ccg gct ccc cag ccc cag ccg acg ccg cag ccc ggg gcc gcc gcg      1188
Pro Pro Ala Pro Gln Pro Gln Pro Thr Pro Gln Pro Gly Ala Ala Ala
                320                 325                 330

gcg cag gcg gcc tcc tgg tat ctc aac cac agc ggg gac ctg aac cac      1236
Ala Gln Ala Ala Ser Trp Tyr Leu Asn His Ser Gly Asp Leu Asn His
335                 340                 345                 350

ctc ccc ggc cac acg ttc gcg gcc cag cag caa act ttc ccc aac gtg      1284
Leu Pro Gly His Thr Phe Ala Ala Gln Gln Gln Thr Phe Pro Asn Val
                355                 360                 365

cgg gag atg ttc aac tcc cac cgg ctg ggg att gag aac tcg acc ctc      1332
Arg Glu Met Phe Asn Ser His Arg Leu Gly Ile Glu Asn Ser Thr Leu
                370                 375                 380

ggg gag tcc cag gtg agt ggc aat gcc agc tgc cag ctg ccc tac aga      1380
Gly Glu Ser Gln Val Ser Gly Asn Ala Ser Cys Gln Leu Pro Tyr Arg
                385                 390                 395

tcc acg ccg cct ctc tat cgc cac gca gcc ccc tac tcc tac gac tgc      1428
Ser Thr Pro Pro Leu Tyr Arg His Ala Ala Pro Tyr Ser Tyr Asp Cys
                400                 405                 410

acg aaa tac tgacgtgtcc cgggacctcc cctcccccggc ccgctccggc             1477
Thr Lys Tyr
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Val Pro Arg Asp Asp Lys Lys Pro Gly Lys Gly Ser Tyr Trp Thr Leu
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Asp Pro Asp Ser Tyr Asn Met Phe Glu Asn Gly Ser Phe Leu Arg Arg
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Arg Arg Arg Phe Lys Lys Lys Asp Val Ser Lys Glu Lys Glu Glu Arg
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Thr Pro His Leu Ala Asp Ala Pro Lys Glu Ala Glu Lys Lys Val Val
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Ile Lys Ser Glu Ala Ala Ser Pro Ala Leu Pro Val Ile Thr Lys Val
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Glu Thr Leu Ser Pro Glu Ser Ala Leu Gln Gly Ser Pro Arg Ser Ala
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Pro Pro Ala Ala Tyr Gly Gln Pro Cys Ala Gln Gly Leu Glu Ala Gly
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c atg cag gcg cgt tac tcg gta tcg gac ccc aac gcc ctg gga gtg gta    469
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    Gly Ala Gly Met Gly Arg Ser Tyr Ala Pro Tyr His His Gln Pro Ala
            50                      55                  60


    gcg ccc aag gac ctg gtg aag ccg ccc tac agc tat ata gcg ctc atc      661
    Ala Pro Lys Asp Leu Val Lys Pro Pro Tyr Ser Tyr Ile Ala Leu Ile
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    acc atg gcg atc cag aac gcg cca gag aag aag atc act ctg aac ggc      709
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    ttc gtg aaa gtg ccg cgc gac gac aag aag ccg ggc aag ggc agc tac      853
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    Trp Thr Leu Asp Pro Asp Ser Tyr Asn Met Phe Glu Asn Gly Ser Phe
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    Lys Val Val Val Lys Ser Glu Ala Ala Ser Pro Ala Leu Pro Val Ile
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    Arg Ser Ala Ser Ser Thr Pro Ala Gly Ser Pro Asp Gly Ser Leu Pro
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Leu Tyr Thr Gly Ala Glu Arg Pro Ala His Val Cys Val Pro Pro Ala
                340                345                350

ctg gac gag gct ctg tcg gac cac ccg agc ggc ccc ggc tcc ccg ctc       1525
Leu Asp Glu Ala Leu Ser Asp His Pro Ser Gly Pro Gly Ser Pro Leu
                355                360                365

ggc gcc ctc aac ctc gca gcg ggt cag gag ggc gcg ttg ggg gcc tcg       1573
Gly Ala Leu Asn Leu Ala Ala Gly Gln Glu Gly Ala Leu Gly Ala Ser
        370                375                380

ggt cac cac cac cag cat cac ggc cac ctc cac ccg cag gcg cca ccg       1621
Gly His His His Gln His His Gly His Leu His Pro Gln Ala Pro Pro
385                390                395                400

ccc gcc ccg cag ccc cct ccc gcg ccg cag ccc gcc acc cag gcc acc       1669
Pro Ala Pro Gln Pro Pro Pro Ala Pro Gln Pro Ala Thr Gln Ala Thr
                405                410                415

tcc tgg tat ctg aac cac ggc ggg gac ctg agc cac ctc ccc ggc cac       1717
Ser Trp Tyr Leu Asn His Gly Gly Asp Leu Ser His Leu Pro Gly His
                420                425                430

acg ttt gca acc caa cag caa act ttc ccc aac gtc cgg gag atg ttc       1765
Thr Phe Ala Thr Gln Gln Gln Thr Phe Pro Asn Val Arg Glu Met Phe
        435                440                445

aac tcg cac cgg cta gga ctg gac aac tcg tcc ctc ggg gag tcc cag       1813
Asn Ser His Arg Leu Gly Leu Asp Asn Ser Ser Leu Gly Glu Ser Gln
        450                455                460

gtg agc aat gcg agc tgt cag ctg ccc tat cga gct acg ccg tcc ctc       1861
Val Ser Asn Ala Ser Cys Gln Leu Pro Tyr Arg Ala Thr Pro Ser Leu
465                470                475                480

tac cgc cac gca gcc ccc tac tct tac gac tgc acc aaa tac             1903
Tyr Arg His Ala Ala Pro Tyr Ser Tyr Asp Cys Thr Lys Tyr
                485                490
```

```
tgaggctgtc cagtccgctc cagccccagg accgcaccgg cttcgcctcc tccatgggaa    1963
ccttcttcga cggagccgca gaaagcgacg gaaagcgccc ctctctcaga accaggagca    2023
gagagctccg tgcaactcgc aggtaactta ccgcagctc  agtttgagat ctcagcgagt    2083
ccctctaagg gggatgcagc ccagcaaaac gaaatacaga ttttttttttt aattccttcc   2143
cctacccaga tgctgcgcct gctcccttgg ggcttcatag attagcttat ggaccaaacc    2203
catagggacc cctaatgact tctgtggaga ttctccacgg gcgcaagagg tctctccgga    2263
taaggtgcct tctgtaaacg agtgcggatt tgtaaccagg ctattttgtt cttgcccaga    2323
gcctttaata taatatttaa agttgtgtcc actggataag gtttcgtctt gcccaactgt    2383
tactgccaaa ttgaattcaa gaaacgtgtg tgggtctttt ctccccacgt caccatgata    2443
aaataggtcc ctccccaaac tgtaggtctt ttacaaaaca agaaaataat ttatttttt     2503
gttgttgttg ataacgaaa  ttaagtatcg gatactttta atttaggaag tgcatggctt    2563
tgtacagtag atgccatctg gggtattcca aaaacacacc aaaagacttt aaaatttcaa    2623
tctcacctgt gtttgtctta tgtgatctca gtgttgtatt taccttaaaa taaacccgtg    2683
ttgtttttct gcccaaaaaa aaaaaaaaa                                       2712
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<210> 7
<211> 494
<212> PRT
<213> Mus musculus

<400> 7

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Met Gln Ala Arg Tyr Ser Val Ser Asp Pro Asn Ala Leu Gly Val Val
1               5                   10                  15
Pro Tyr Leu Ser Glu Gln Asn Tyr Tyr Arg Ala Ala Gly Ser Tyr Gly
            20                  25                  30
Gly Met Ala Ser Pro Met Gly Val Tyr Ser Gly His Pro Glu Gln Tyr
        35                  40                  45
Gly Ala Gly Met Gly Arg Ser Tyr Ala Pro Tyr His His Gln Pro Ala
    50                  55                  60
Ala Pro Lys Asp Leu Val Lys Pro Pro Tyr Ser Tyr Ile Ala Leu Ile
65                  70                  75                  80
Thr Met Ala Ile Gln Asn Ala Pro Glu Lys Lys Ile Thr Leu Asn Gly
                85                  90                  95
Ile Tyr Gln Phe Ile Met Asp Arg Phe Pro Phe Tyr Arg Glu Asn Lys
                100                 105                 110
Gln Gly Trp Gln Asn Ser Ile Arg His Asn Leu Ser Leu Asn Glu Cys
            115                 120                 125
Phe Val Lys Val Pro Arg Asp Asp Lys Lys Pro Gly Lys Gly Ser Tyr
    130                 135                 140
Trp Thr Leu Asp Pro Asp Ser Tyr Asn Met Phe Glu Asn Gly Ser Phe
145                 150                 155                 160
Leu Arg Arg Arg Arg Arg Phe Lys Lys Lys Asp Val Pro Lys Asp Lys
                165                 170                 175
Glu Glu Arg Ala His Leu Lys Glu Pro Pro Ser Thr Thr Ala Lys Gly
            180                 185                 190
Ala Pro Thr Gly Thr Pro Val Ala Asp Gly Pro Lys Glu Ala Glu Lys
        195                 200                 205
Lys Val Val Val Lys Ser Glu Ala Ala Ser Pro Ala Leu Pro Val Ile
    210                 215                 220
Thr Lys Val Glu Thr Leu Ser Pro Glu Gly Ala Leu Gln Ala Ser Pro
225                 230                 235                 240
Arg Ser Ala Ser Ser Thr Pro Ala Gly Ser Pro Asp Gly Ser Leu Pro
                245                 250                 255
Glu His His Ala Ala Ala Pro Asn Gly Leu Pro Gly Phe Ser Val Glu
            260                 265                 270
Thr Ile Met Thr Leu Arg Thr Ser Pro Pro Gly Gly Asp Leu Ser Pro
```

```
               275                    280                      285
Ala Ala Ala Arg Ala Gly Leu Val Val Pro Pro Leu Ala Leu Pro Tyr
     290                    295                      300
Ala Ala Ala Pro Pro Ala Ala Tyr Thr Gln Pro Cys Ala Gln Gly Leu
305                    310                      315                320
Glu Ala Ala Gly Ser Ala Gly Tyr Gln Cys Ser Met Arg Ala Met Ser
                325                    330                      335
Leu Tyr Thr Gly Ala Glu Arg Pro Ala His Val Cys Val Pro Pro Ala
                340                    345                      350
Leu Asp Glu Ala Leu Ser Asp His Pro Ser Gly Pro Gly Ser Pro Leu
                355                    360                      365
Gly Ala Leu Asn Leu Ala Ala Gly Gln Glu Gly Ala Leu Gly Ala Ser
     370                    375                      380
Gly His His His Gln His His Gly His Leu His Pro Gln Ala Pro Pro
385                    390                      395                400
Pro Ala Pro Gln Pro Pro Pro Ala Pro Gln Pro Ala Thr Gln Ala Thr
                405                    410                      415
Ser Trp Tyr Leu Asn His Gly Gly Asp Leu Ser His Leu Pro Gly His
                420                    425                      430
Thr Phe Ala Thr Gln Gln Gln Thr Phe Pro Asn Val Arg Glu Met Phe
                435                    440                      445
Asn Ser His Arg Leu Gly Leu Asp Asn Ser Ser Leu Gly Glu Ser Gln
     450                    455                      460
Val Ser Asn Ala Ser Cys Gln Leu Pro Tyr Arg Ala Thr Pro Ser Leu
465                    470                      475                480
Tyr Arg His Ala Ala Pro Tyr Ser Tyr Asp Cys Thr Lys Tyr
                485                    490
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<210> 8
<211> 3289
<212> DNA
<213> Homo sapiens

<400> 8
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gaattcggag gattaagttg tcagtcagca cgttgctacc ttcccctcta tgcactccgc      60
tgcctggctc ctcggcgggg agcgagggaa actcagtttg tagggtttac ctctaaaacc     120
tcgataggtt atccttgacg accccgagcc tggaaactcc ctgttgatga ttaattattt     180
gattaaataa gtataacatc caggagaggc cctgccattc caatccagcg cgtttgcttt     240
tgaatccatt acacctgggc ccccataatt aggaaatcta attattcgct tcatcactca     300
ttaataagaa aaatgtccca ggatcattgc tacttacaag gtctttggga gagatatttt     360
actctattaa tccattctat tttatatttc aaattgattt tttttaacag aggaaagtgg     420
ctatcttttt gttttgggca tgtgggccca ttcaccaaaa tgtgatcata aaataaattt     480
taataagata taactttta aaaagttttc aagtgaagac ggagtcgccg cggaggccgg     540
ggcggcgggg tcttagagcc gacggattcc tgcgctcctc gccccgattg gcgccggact     600
cctctcagct gccgggtgat tggctcaaag ttccgggagg gggcgtggcc cgaggaaagt     660
aaaaactcgc tttcagcaag aagactttg aaacttttcc caatccctaa aagggacttg     720
gcctcttttt ctgggctcag cggggcagcc gctcggaccc cggcgcgctg accctcgggg     780
ctgccgattc gctgggggct tggagagcct cctgcgcccc tcctcgcgcg ggccgagggt     840
ccaccttggt ccccaggccg cggcgtctcc gctgggtccg cggccgcccg cctgcccgcg     900
ctgccgccgc cgggtcctgg agccagcgag gagcggggcc ggcgctgcgc ttgcccgggg     960
cgcgccctcc aggatgccga tccgcccggt ccgctgaaag cgcgcgcccc tgctcggccc    1020
gagcgacgac gaccgcgcac cctcgccccg gaggctgcca ggagaccggg gccgcccctc    1080
ccgctcccct cctctccccc tctggctctc tcgcgctctc tcgctctcag gccccccctc    1140
gctcccccgg ccgcagtccg tgcgcgaggg cgccggcgag ccgtctcgga agcagcatgc    1200
aggcgcgcta ctccgtgtcc gaccccaacg ccctgggagt ggtgccctac ctgagcgagc    1260
agaattacta ccgggctgcg ggcagctacg gcggcatggc cagccccatg ggcgtctatt    1320
ccggccaccc ggagcagtac agcgcgggga tgggccgctc ctacgcgccc taccaccacc    1380
```

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accagcccgc ggcgcctaag gacctggtga agccgcccta cagctacatc gcgctcatca    1440
ccatggccat ccagaacgcg cccgagaaga agatcacctt gaacggcatc taccagttca    1500
tcatggaccg cttcccttc taccgggaga caagcaggg ctggcagaac agcatccgcc    1560
acaacctctc gctcaacgag tgcttcgtca aggtgccccg cgacgacaag aagcccggca    1620
agggcagtta ctggaccctg gacccggact cctacaacat gttcgagaac ggcagcttcc    1680
tgcggcgccg cggcgcttc aaaaagaagg acgtgtccaa ggagaaggag gagcgggccc    1740
acctcaagga gccgcccccg gcggcgtcca agggcgcccc ggccacccc cacctagcgg    1800
acgcccccaa ggaggccgag aagaaggtgg tgatcaagag cgaggcggcg tccccggcgc    1860
tgccggtcat caccaaggtg gagacgctga ccccgagag cgcgctgcag ggcagcccgc    1920
gcagcgcggc ctccacgccc gccggctccc ccgacggttc gctgccggag caccacgccg    1980
cggcgcccaa cgggctgcct ggcttcagcg tggagaacat catgaccctg cgaacgtcgc    2040
cgccgggcgg agagctgagc ccggggggccg gacgcgcggg cctggtggtg ccgccgctgg    2100
cgctgccata cgccgccgcg ccgcccgccg cctacggcca gccgtgcgct cagggcctgg    2160
aggccggggc cgccgggggc taccagtgca gcatgcgagc gatgagcctg tacaccgggg    2220
ccgagcggcc ggcgcacatg tgcgtcccgc ccgccctgga cgaggccctc tcggaccacc    2280
cgagcggccc cacgtcgccc ctgagcgctc tcaacctcgc cgccggcag gagggcgcgc    2340
tcgccgccac gggccaccac caccagcacc acggccacca ccacccgcag cgcgccgccgc    2400
ccccgccggc tccccagccc cagccgacgc cgcagcccgg ggccgccgcg cgcaggcgg    2460
cctcctggta tctcaaccac agcggggacc tgaaccacct ccccggccac acgttcgcgg    2520
cccagcagca aactttcccc aacgtgcggg agatgttcaa ctcccaccgg ctggggattg    2580
agaactcgac cctcggggag tcccaggtga gtggcaatgc cagctgccag ctgccctaca    2640
gatccacgcc gcctctctat cgccacgcag ccccctactc ctacgactgc acgaaatact    2700
gacgtgtccc gggacctccc ctccccggcc cgctccggct tcgcttccca gccccgaccc    2760
aaccagacaa ttaaggggct gcagagacgc aaaaaagaaa caaaacatgt ccaccaacct    2820
tttctcagac ccggagcag agagcgggca cgctagcccc cagccgtctg tgaagagcgc    2880
aggtaacttt aattcgccgc cccgtttctg ggatcccagg aaaccctcc aaagggacgc    2940
agcccaacaa aatgagtatt ggtcttaaaa tccccctccc ctaccaggac ggctgtgctg    3000
tgctcgacct gagctttcaa aagttaagtt atggacccaa atcccatagc gagcccctag    3060
tgactttctg tagggggtccc cataggtgta tggggggtctc tatagataat atatgtgctg    3120
tgtgtaattt taaattctc caaccgtgct gtacaaatgt gtggatttgt aatcaggcta    3180
ttttgttgtt gttgttgttg ttcagagcca ttaatataat atttaaagtt gagttcactg    3240
gataagtttt tcatcttgcc caaccatttc taactgccaa attgaattc              3289
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<210> 9
<211> 1506
<212> DNA
<213> Homo sapiens

<220>
<221> CDS
<222> (1)...(1503)

<400> 9

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atg cag gcg cgc tac tcc gtg tcc gac ccc aac gcc ctg gga gtg gtg      48
Met Gln Ala Arg Tyr Ser Val Ser Asp Pro Asn Ala Leu Gly Val Val
1               5                   10                  15

ccc tac ctg agc gag cag aat tac tac cgg gct gcg ggc agc tac ggc      96
Pro Tyr Leu Ser Glu Gln Asn Tyr Tyr Arg Ala Ala Gly Ser Tyr Gly
            20                  25                  30

ggc atg gcc agc ccc atg ggc gtc tat tcc ggc cac ccg gag cag tac     144
Gly Met Ala Ser Pro Met Gly Val Tyr Ser Gly His Pro Glu Gln Tyr
        35                  40                  45

agc gcg ggg atg ggc cgc tcc tac gcg ccc tac cac cac cac cag ccc     192
Ser Ala Gly Met Gly Arg Ser Tyr Ala Pro Tyr His His His Gln Pro
```

```
                50                        55                        60

gcg gcg cct aag gac ctg gtg aag ccg ccc tac agc tac atc gcg ctc          240
Ala Ala Pro Lys Asp Leu Val Lys Pro Pro Tyr Ser Tyr Ile Ala Leu
 65              70                        75                   80

atc acc atg gcc atc cag aac gcg ccc gag aag aag atc acc ttg aac          288
Ile Thr Met Ala Ile Gln Asn Ala Pro Glu Lys Lys Ile Thr Leu Asn
                    85                        90                   95

ggc atc tac cag ttc atc atg gac cgc ttc ccc ttc tac cgg gag aac          336
Gly Ile Tyr Gln Phe Ile Met Asp Arg Phe Pro Phe Tyr Arg Glu Asn
                100                       105                110

aag cag ggc tgg cag aac agc atc cgc cac aac ctc tcg ctc aac gag          384
Lys Gln Gly Trp Gln Asn Ser Ile Arg His Asn Leu Ser Leu Asn Glu
            115                       120                125

tgc ttc gtc aag gtg ccc cgc gac gac aag aag ccc ggc aag ggc agt          432
Cys Phe Val Lys Val Pro Arg Asp Asp Lys Lys Pro Gly Lys Gly Ser
        130                       135                140

tac tgg acc ctg gac ccg gac tcc tac aac atg ttc gag aac ggc agc          480
Tyr Trp Thr Leu Asp Pro Asp Ser Tyr Asn Met Phe Glu Asn Gly Ser
145                       150                       155                160

ttc ctg cgg cgc cgg cgg cgc ttc aaa aag aag gac gtg tcc aag gag          528
Phe Leu Arg Arg Arg Arg Arg Phe Lys Lys Lys Asp Val Ser Lys Glu
                    165                       170                175

aag gag gag cgg gcc cac ctc aag gag ccg ccc ccg gcg gcg tcc aag          576
Lys Glu Glu Arg Ala His Leu Lys Glu Pro Pro Pro Ala Ala Ser Lys
                180                       185                190

ggc gcc ccg gcc acc ccc cac cta gcg gac gcc ccc aag gag gcc gag          624
Gly Ala Pro Ala Thr Pro His Leu Ala Asp Ala Pro Lys Glu Ala Glu
            195                       200                205

aag aag gtg gtg atc aag agc gag gcg gcg tcc ccg gcg ctg ccg gtc          672
Lys Lys Val Val Ile Lys Ser Glu Ala Ala Ser Pro Ala Leu Pro Val
            210                       215                220

atc acc aag gtg gag acg ctg agc ccc gag agc gcg ctg cag ggc agc          720
Ile Thr Lys Val Glu Thr Leu Ser Pro Glu Ser Ala Leu Gln Gly Ser
225                       230                       235                240

ccg cgc agc gcg gcc tcc acg ccc gcc ggc tcc ccc gac ggt tcg ctg          768
Pro Arg Ser Ala Ala Ser Thr Pro Ala Gly Ser Pro Asp Gly Ser Leu
                    245                       250                255

ccg gag cac cac gcc gcg gcg ccc aac ggg ctg cct ggc ttc agc gtg          816
Pro Glu His His Ala Ala Ala Pro Asn Gly Leu Pro Gly Phe Ser Val
                260                       265                270

gag aac atc atg acc ctg cga acg tcg ccg ccg ggc gga gag ctg agc          864
Glu Asn Ile Met Thr Leu Arg Thr Ser Pro Pro Gly Gly Glu Leu Ser
            275                       280                285
```

```
ccg ggg gcc gga cgc gcg ggc ctg gtg gtg ccg ccg ctg gcg ctg cca        912
Pro Gly Ala Gly Arg Ala Gly Leu Val Val Pro Pro Leu Ala Leu Pro
    290                 295                 300

tac gcc gcc gcg ccg ccc gcc gcc tac ggc cag ccg tgc gct cag ggc        960
Tyr Ala Ala Ala Pro Pro Ala Ala Tyr Gly Gln Pro Cys Ala Gln Gly
305                 310                 315                 320

ctg gag gcc ggg gcc gcc ggg ggc tac cag tgc agc atg cga gcg atg       1008
Leu Glu Ala Gly Ala Ala Gly Gly Tyr Gln Cys Ser Met Arg Ala Met
                325                 330                 335

agc ctg tac acc ggg gcc gag cgg ccg gcg cac atg tgc gtc ccg ccc       1056
Ser Leu Tyr Thr Gly Ala Glu Arg Pro Ala His Met Cys Val Pro Pro
            340                 345                 350

gcc ctg gac gag gcc ctc tcg gac cac ccg agc ggc ccc acg tcg ccc       1104
Ala Leu Asp Glu Ala Leu Ser Asp His Pro Ser Gly Pro Thr Ser Pro
        355                 360                 365

ctg agc gct ctc aac ctc gcc gcc ggc cag gag ggc gcg ctc gcc gcc       1152
Leu Ser Ala Leu Asn Leu Ala Ala Gly Gln Glu Gly Ala Leu Ala Ala
    370                 375                 380

acg ggc cac cac cac cag cac cac ggc cac cac cac ccg cag gcg ccg       1200
Thr Gly His His His Gln His His Gly His His His Pro Gln Ala Pro
385                 390                 395                 400

ccg ccc ccg ccg gct ccc cag ccc cag ccg acg ccg cag ccc ggg gcc       1248
Pro Pro Pro Pro Ala Pro Gln Pro Gln Pro Thr Pro Gln Pro Gly Ala
                405                 410                 415

gcc gcg gcg cag gcg gcc tcc tgg tat ctc aac cac agc ggg gac ctg       1296
Ala Ala Ala Gln Ala Ala Ser Trp Tyr Leu Asn His Ser Gly Asp Leu
                420                 425                 430

aac cac ctc ccc ggc cac acg ttc gcg gcc cag cag caa act ttc ccc       1344
Asn His Leu Pro Gly His Thr Phe Ala Ala Gln Gln Gln Thr Phe Pro
            435                 440                 445

aac gtg cgg gag atg ttc aac tcc cac cgg ctg ggg att gag aac tcg       1392
Asn Val Arg Glu Met Phe Asn Ser His Arg Leu Gly Ile Glu Asn Ser
    450                 455                 460

acc ctc ggg gag tcc cag gtg agt ggc aat gcc agc tgc cag ctg ccc       1440
Thr Leu Gly Glu Ser Gln Val Ser Gly Asn Ala Ser Cys Gln Leu Pro
465                 470                 475                 480

tac aga tcc acg ccg cct ctc tat cgc cac gca gcc ccc tac tcc tac       1488
Tyr Arg Ser Thr Pro Pro Leu Tyr Arg His Ala Ala Pro Tyr Ser Tyr
                485                 490                 495

gac tgc acg aaa tac tga                                                1506
Asp Cys Thr Lys Tyr
                500
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<210> 10
<211> 501
<212> PRT
<213> Homo sapiens

<400> 10

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Met Gln Ala Arg Tyr Ser Val Ser Asp Pro Asn Ala Leu Gly Val Val
1               5                   10                  15
Pro Tyr Leu Ser Glu Gln Asn Tyr Tyr Arg Ala Ala Gly Ser Tyr Gly
                20                  25                  30
Gly Met Ala Ser Pro Met Gly Val Tyr Ser Gly His Pro Glu Gln Tyr
        35                  40                  45
Ser Ala Gly Met Gly Arg Ser Tyr Ala Pro Tyr His His His Gln Pro
    50                  55                  60
Ala Ala Pro Lys Asp Leu Val Lys Pro Pro Tyr Ser Tyr Ile Ala Leu
65                  70                  75                  80
Ile Thr Met Ala Ile Gln Asn Ala Pro Glu Lys Lys Ile Thr Leu Asn
                85                  90                  95
Gly Ile Tyr Gln Phe Ile Met Asp Arg Phe Pro Phe Tyr Arg Glu Asn
            100                 105                 110
Lys Gln Gly Trp Gln Asn Ser Ile Arg His Asn Leu Ser Leu Asn Glu
            115                 120                 125
Cys Phe Val Lys Val Pro Arg Asp Asp Lys Lys Pro Gly Lys Gly Ser
    130                 135                 140
Tyr Trp Thr Leu Asp Pro Asp Ser Tyr Asn Met Phe Glu Asn Gly Ser
145                 150                 155                 160
Phe Leu Arg Arg Arg Arg Arg Phe Lys Lys Lys Asp Val Ser Lys Glu
                165                 170                 175
Lys Glu Glu Arg Ala His Leu Lys Glu Pro Pro Pro Ala Ala Ser Lys
            180                 185                 190
Gly Ala Pro Ala Thr Pro His Leu Ala Asp Ala Pro Lys Glu Ala Glu
            195                 200                 205
Lys Lys Val Val Ile Lys Ser Glu Ala Ala Ser Pro Ala Leu Pro Val
    210                 215                 220
Ile Thr Lys Val Glu Thr Leu Ser Pro Glu Ser Ala Leu Gln Gly Ser
225                 230                 235                 240
Pro Arg Ser Ala Ala Ser Thr Pro Ala Gly Ser Pro Asp Gly Ser Leu
                245                 250                 255
Pro Glu His His Ala Ala Ala Pro Asn Gly Leu Pro Gly Phe Ser Val
            260                 265                 270
Glu Asn Ile Met Thr Leu Arg Thr Ser Pro Pro Gly Gly Glu Leu Ser
            275                 280                 285
Pro Gly Ala Gly Arg Ala Gly Leu Val Val Pro Pro Leu Ala Leu Pro
    290                 295                 300
Tyr Ala Ala Ala Pro Pro Ala Ala Tyr Gly Gln Pro Cys Ala Gln Gly
305                 310                 315                 320
Leu Glu Ala Gly Ala Ala Gly Gly Tyr Gln Cys Ser Met Arg Ala Met
                325                 330                 335
Ser Leu Tyr Thr Gly Ala Glu Arg Pro Ala His Met Cys Val Pro Pro
            340                 345                 350
Ala Leu Asp Glu Ala Leu Ser Asp His Pro Ser Gly Pro Thr Ser Pro
    355                 360                 365
Leu Ser Ala Leu Asn Leu Ala Ala Gly Gln Glu Gly Ala Leu Ala Ala
    370                 375                 380
Thr Gly His His His Gln His His Gly His His His Pro Gln Ala Pro
385                 390                 395                 400
```

```
Pro Pro Pro Pro Ala Pro Gln Pro Gln Pro Thr Pro Gln Pro Gly Ala
            405           410             415
Ala Ala Ala Gln Ala Ala Ser Trp Tyr Leu Asn His Ser Gly Asp Leu
            420           425             430
Asn His Leu Pro Gly His Thr Phe Ala Ala Gln Gln Gln Thr Phe Pro
            435           440             445
Asn Val Arg Glu Met Phe Asn Ser His Arg Leu Gly Ile Glu Asn Ser
        450           455             460
Thr Leu Gly Glu Ser Gln Val Ser Gly Asn Ala Ser Cys Gln Leu Pro
465           470             475             480
Tyr Arg Ser Thr Pro Pro Leu Tyr Arg His Ala Ala Pro Tyr Ser Tyr
            485             490               495
Asp Cys Thr Lys Tyr
            500


<210> 11
<211> 327
<212> DNA
<213> Homo sapiens


<400> 11
ttttttttac attttcgtct ctgttcttg tgattggaaa taagtggcac gccccattgc      60
cttctagtcg cctccccgaa gcgaagaggc cgaagcgaag aggcctggtg ggttgtctca     120
acatcctttt gctgagaatc gaatacgcag ccgatgaaca gccaggaagg gtgcaaggaa     180
accttgaacg gcatctacca gttcatcatg gaccgcttcc ccttctaccg ggagaacaag     240
cagggctggc agaacagcat ccgccacaac ctctcgctca cgagtgctt cgtcaaggtg      300
ccccgcgacg acaagaagcc cggcaag                                         327


<210> 12
<211> 147
<212> DNA
<213> Homo sapiens


<400> 12
ccgtctgaga atcgaatacg cagccgatga acagccagga agggtgcaag gaaaaccttga     60
acggcatcta ccagttcatc atggaccgct tccccttcta ccgggagaac aagcagggct     120
ggcagaacag catccgccac aacctct                                         147


<210> 13
<211> 878
<212> DNA
<213> Homo sapiens


<400> 13
gtctctctca cctttctgt cttgatgaga cgaatttctt tcccctcccc ttttcctttc      60
tttggggcgg gggagggtgg ataatatatt gggcgactcg atttaggtgt ttgtttgttt     120
gtttgtttgt ttccccagat gacattggtt taaaccggga cacccttgtg aatacaaacg     180
taggcagcaa ctgccatttt ggaatttatt ttttcatagt ccttagctat tttaggtttt     240
gctgtgataa agctgtttct ctctctctct ctctctcaca cacacacaca caccctcgt      300
aaaagcagag taaataatat tcctccagga agcctacagg ctgaggagtg tttcttgatc     360
aatagtttgc atttccagta aaatcgtgac acgaactcag tgtgcctgtc atgcgctgca     420
ggagaagggc actttttgct agtcctttt ttttttaag ctagatgcgg aaatactagc      480
ttattaaaaa taataaagtc atggtgggag tttagggttg gggcagaaag ctcaaatcat     540
ttgcctgtga gctgagaact gggcagcttt attttacttt gtttcaaaga aagaagaaaa     600
aggatcaggt tagaaaaaga gcccagaata ctcataaaaa caatgtttca gaagtggaat     660
attcaaggta aaggaacctg atttgtagct ccctttggc tttgaattga tcaggagaca      720
aagataatgc atctacattt tcgtcttctg ttcttttatt ggaaataagt ggcacgcccc     780
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```
attgccttct agtcgcctcc ccgaagcgaa gaggccgaag cgaagaggcc tggtgggttg      840
tctcaacatc cttttgctga gaatcgaata cgcagccg                              878


<210> 14
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> primer for PCR

<400> 14
ccattgcctt ctagtcgcct cc                                               22


<210> 15
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> primer for PCR

<400> 15
cgttggggtc ggacacggag ta                                               22


<210> 16
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> primer for PCR

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<210> 17
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<210> 18
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<220>
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<210> 20
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<210> 24
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